



Resources

[Materials Update](#)

[Physics Portal](#)

[Nature](#)

[Nature Biotech](#)

NPG Subject areas

Access material from all
our publications in your
subject area:

- Biotechnology
- Cancer
- Chemistry
- Clinical Medicine
- Dentistry
- Development
- Drug Discovery
- Earth Sciences
- Evolution & Ecology
- Genetics
- Immunology
- Materials Science
- Medical Research
- Microbiology **NEW!**
- Molecular Cell Biology
- Neuroscience
- Pharmacology
- Physics

[browse all publications](#)

Press Releases

As a free service to the journalism community and general public, *Nature Materials* provides its press releases online (after the embargo has been lifted) to help disseminate and explain the cutting edge, high-impact developments reported in its pages.

Journalists wishing to receive press releases while papers are still under embargo should contact press@nature.com for further information.

Please quote *Nature Materials* as the source of these items

September 2004

Embargoed for release: 12th September 2004, 18:00 BST

Length without limit

When nanotubes were first discovered, in the early 1990s, researchers envisaged applications such as continuous thin ropes for a 'space elevator' that would link the earth to objects in space. But such applications, which would exploit the unparalleled strength and stiffness of nanotubes, require the growth of ultra-long nanotubes that can be woven into macroscopic fibres. In the October issue of *Nature Materials*, Yuntian Zhu and colleagues report the growth of single-walled carbon nanotubes with no intrinsic length limit.

Zhu and colleagues use vapour deposition in combination with a metal catalyst to grow the ultra-long nanotubes at a high growth rate of 11 micrometres per second. The researchers found that if the nanotubes could be kept free-floating above the substrate, they grew in a straight line without any defects. Growth was only terminated when the catalyst particle on the tip of the nanotube came into contact with the substrate and caused the nanotube to develop a kink.

The longest nanotube grown by Zhu *et al.* was four centimetres, with a weight of the order of 0.1 picograms. Although large-scale synthesis of much longer nanotubes would be necessary to weave nanofibres for use in a space elevator, other applications are more immediate — such as the use of long metallic nanotubes as interconnects in electronic circuits.

doi: 10.1038/nmat1216

[Abstract](#) | [Full Text](#)

Previous Press Releases:

2004

[Aug](#) | [Jul](#) | [Jun](#) | [May](#) | [Mar](#) | [Feb](#) | [Jan](#)

2003

[Dec](#) | [Nov](#) | [Oct](#) | [Sep](#) | [Jul](#) | [Jun](#) | [May](#) | [Apr](#) | [Mar](#) | [Feb](#) | [Jan](#)

2002

[Dec](#) | [Nov](#) | [Oct](#) | [Sep](#)

reach

To **reach** even more of the best scientific job applicants, *Naturejobs* had to partner with one of the world's most influential websites.

nature.com

Jobs are now semantically matched to content from nature.com

Learn more here.

naturejobs